

REMARKS

Claims 1-13 are canceled without prejudice or disclaimer. Claims 14-22 have been added. No new matter is included. Applicants have amended the specification and claims to conform to U.S. practice. The changes to Ra, Ry and Rz in the specification correct the formula definition and is obvious to those skilled in the art. For example, the 10 point average roughness (Rz) is made to conform to US standard. This definition is provided from Korean Standard KS B 0161 on the basis of ISO 4287.

Applicant thanks the Examiner for acknowledging the claim for foreign priority and indicating that the certified copies of the priority documents have been received.

Reconsideration and allowance of the rejected claims are respectfully requested in view of the following remarks.

Claim Rejections Under 35 U.S.C. §112

Claim 3 is rejected under 35 U.S.C. §112 for allegedly reciting "the mean line of the profile". Applicant respectfully submit that claim 3 does not include this recitation. Original claims 1-13 are canceled, thereby rendering this rejection moot. New claims 14-22 do not include this recitation. Thus, the Examiner is respectfully requested to withdraw this rejection.

Claim Rejections Under 35 U.S.C §102 and 35 U.S.C. §103

Claims 1 and 2 are rejected under 35 U.S.C. 102(a) as being anticipated by Tabata et al. (U.S. Patent 6,680,430). Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being obvious over Tabata et al. Applicants respectfully traverse this rejection.

Claims 1-4 are canceled, thereby rendering their rejection moot.

New independent claims 14 and 20 recite, among other things, a raised portion provided on a lower surface of the roll to be convex in shape, the raised portion forming a line that is positioned in a direction parallel to the inner or outer circumference of the diaphragm edge. According to one embodiment, the roll includes an arch shape that is weak to a force applied downward and the raised portion is provided to prevent deformation of the diaphragm edge (see the specification at page 8, lines 7-9). According to one embodiment, when the raised portion is formed on the lower surface of the arch shaped roll, durability to downward force is enhanced and the shape of the diaphragm edge is not easily changed in the hot summer season (see the specification at page 8, lines 9-12 and FIGs. 5A and 5B).

Tabata et al. fail to teach or suggest a raised portion provided on a lower surface of the roll to be convex in shape, the raised portion forming a line that is positioned in a direction parallel to the inner or outer circumference of the diaphragm edge.

Regarding independent claims 16, 17, 18, 19, these claims recite particular dimensions for the emboss. In particular, these claims recite, among other things, that the emboss includes a center line average (Ra) between 2.44 μm – 28.70 μm , a maximum peak to valley roughness height (Ry) between 14.25 μm – 120.00 μm , and a ten point height (Rz) between 7.90 μm – 97.00 μm . The Examiner acknowledges that Tabata et al. fail to teach or suggest "the width and the height of the line and the embossment," (see paragraph 5, on page 3 of the January 11, 2007 office action). However, the Examiner alleges that "Tabata does not restrict to any shape and size for the printed or embossed edge" and further alleges that "therefore, it would have been obvious to one skilled in the art to provide any shape and size for the printed or embossed

speaker edge," (see paragraph 5, on page 3 of the January 11, 2007 office action). Applicant respectfully disagrees with the Examiner's allegations.

Pursuant to MPEP §2144.05(III), Applicants may rebut a *prima facie* case of obviousness based on overlapping ranges by showing the criticality of the claimed range. This may be achieved by showing that the claimed range achieves unexpected results relative to the prior art range (see *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). To this end, Applicant respectfully provides the attached Appendix of result graphs showing that the claimed ranges provide unexpected results relative to the prior art for smoothness of sound and superior sensitivity of sound of speakers.

Graph 2 illustrates a frequency characteristic curve for Ra between 2.44 to 28.7 μm , Ry between 14.25 to 120 μm and Rz between 7.9 and 97 μm . The sound quality for speakers in this optimal range provide an improved frequency characteristic curve in the upper, middle, and lower sound ranges.

By contrast, Graph 1 illustrates a frequency characteristic curve for: Ra of 2.33 μm , Ry of 13.55 μm and Rz of 7.4 μm . With only Ra out of range, the sound quality for speakers in this range provide a deteriorated frequency characteristic curve in the upper, middle, and lower sound ranges.

Furthermore, Graph 3 illustrates a frequency characteristic curve for: Ra of 30.11 μm , Ry of 12.7 μm and Rz of 101 μm . With Ra, Ry and Rz out of range, the sound quality for speakers in this range provide a deteriorated frequency characteristic curve in the upper, middle, and lower sound ranges.

Graph 4 shows an overlay of Graph 1-3 for comparison purposes.

In view of the foregoing differences between claims 14 and 16-20 and Tabata et al., Applicants respectfully submit that the Examiner has failed to establish a *prima facie* case of obviousness based on Tabata et al. Furthermore, since Tabata et al. neither disclose nor suggest the invention claimed in independent claims 14 and 16-20, these claims clearly are not anticipated by, nor rendered obvious, over the disclosure of Tabata et al. Thus, claims 14 and 16-20 are allowable over Tabata et al. Additionally, claims 15, 21 and 22 are allowable at least by virtue of their dependency. Thus, reconsideration and allowance of these claims are requested.

Claims 5-13 are rejected as being obvious over Tabata et al. in view of Ogura et al. (U.S. Patent 6,039,145) or Sheffer (U.S. Patent Publication No. 2003/0134553). Applicants respectfully traverse this rejection.

Claims 5-13 are canceled, thereby rendering their rejection moot.

New independent claims 14 and 20 recite, among other things, a raised portion provided on a lower surface of the roll to be convex in shape, the raised portion forming a line that is positioned in a direction parallel to the inner or outer circumference of the diaphragm edge. According to one embodiment, the roll includes an arch shape that is weak to a force applied downward and the raised portion is provided to prevent deformation of the diaphragm edge (see the specification at page 8, lines 7-9). According to one embodiment, when the raised portion is formed on the lower surface of the arch shaped roll, durability to downward force is enhanced and the shape of the diaphragm edge is not easily changed in the hot summer season (see the

specification at page 8, lines 9-12 and FIGs. 5A and 5B).

As discussed above, Tabata et al. fail to teach or suggest this feature. Ogura et al. and Sheffer also fail to teach or suggest this feature. Thus, Tabata et al., Ogura et al. and Sheffer, both alone and in combination, do not teach or suggest a raised portion provided on a lower surface of the roll to be convex in shape, the raised portion forming a line that is positioned in a direction parallel to the inner or outer circumference of the diaphragm edge.

Regarding independent claims 16, 17, 18, 19, these claims recite particular dimensions for the emboss. In particular, these claims recite, among other things, that the emboss includes a center line average (Ra) between 2.44 μm – 28.70 μm , a maximum peak to valley roughness height (Ry) between 14.25 μm – 120.00 μm , and a ten point height (Rz) between 7.90 μm – 97.00 μm . The Examiner acknowledges that Tabata et al. fail to teach or suggest "the width and the height of the line and the embossment," (see paragraph 5, on page 3 of the January 11, 2007 office action). Additionally, Ogura et al. and Sheffer fail to teach or suggest these features. However, the Examiner alleges that "Tabata does not restrict to any shape and size for the printed or embossed edge" and further alleges that "therefore, it would have been obvious to one skilled in the art to provide any shape and size for the printed or embossed speaker edge," (see paragraph 5, on page 3 of the January 11, 2007 office action). Applicant respectfully disagrees with the Examiner's allegations.

Pursuant to MPEP §2144.05(III), Applicants may rebut a *prima facie* case of obviousness based on overlapping ranges by showing the criticality of the claimed range. This may be achieved by showing that the claimed range achieves unexpected results relative to the prior art

range (see *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). To this end, Applicant respectfully provides the attached result graphs showing that the claimed ranges provide unexpected results relative to the prior art for smoothness of sound and superior sensitivity of sound of speakers.

Graph 2 illustrates a frequency characteristic curve for Ra between 2.44 to 28.7 μm , Ry between 14.25 to 120 μm and Rz between 7.9 and 97 μm . The sound quality for speakers in this optimal range provide an improved frequency characteristic curve in the upper, middle, and lower sound ranges.

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Graph 4 shows an overlay of Graph 1-3 for comparison purposes.

In view of the foregoing differences between claims 14 and 16-20 and Tabata et al., Ogura et al. and Sheffer, Applicants respectfully submit that the Examiner has failed to establish a *prima facie* case of obviousness based on Tabata et al. in view of Ogura et al. or Sheffer. Furthermore, since Tabata et al. Ogura et al., and Sheffer, both alone and in combination, neither

disclose nor suggest the invention claimed in independent claims 14 and 16-20, these claims clearly are not anticipated by, nor rendered obvious, over the disclosure of Tabata et al. in view of Ogura et al. or Sheffer. Thus, claims 14 and 16-20 are allowable over Tabata et al., Ogura et al. and Sheffer. Additionally, claims 15, 21 and 22 are allowable at least by virtue of their dependency. Thus, reconsideration and allowance of these claims are requested.

If the Examiner believes that there is any issue which could be resolved by a telephone or personal interview, the Examiner is respectfully requested to contact the undersigned attorneys at the telephone number listed below.

Applicants hereby petition for any extension of time which may be required to maintain the pendency of this case, and any required fee for such an extension is to be charged to Deposit Account No. 50-0951.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Jean C. Edwards', written over a horizontal line.

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Amendment Under 37 C.F.R. § 1.111
U.S. Patent Application No.: 10/781,665

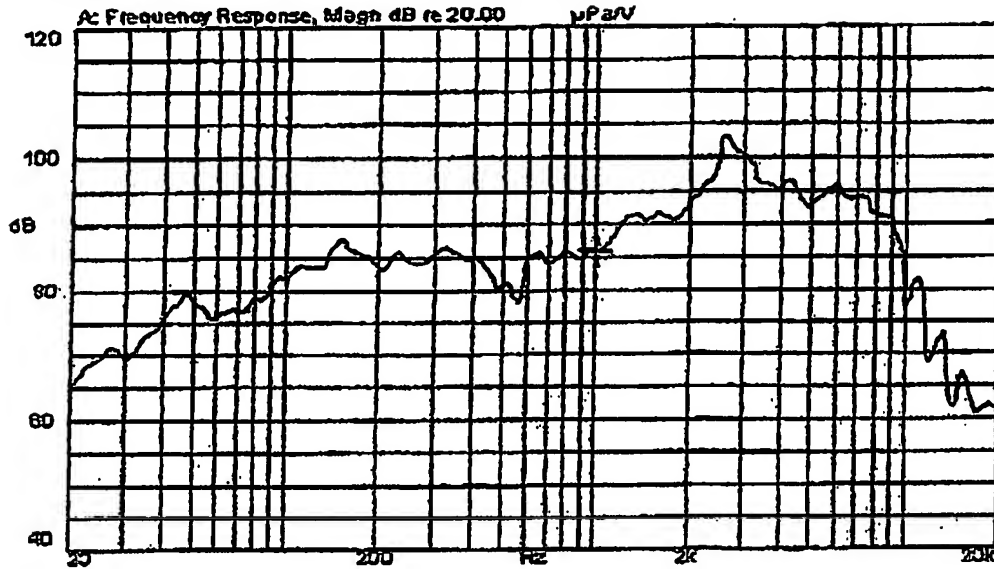
Atty. Dkt. No.: 71470-0002
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APPENDIX



[Graph 1]

X: 1.0000kHz Y: 86.25dB ZA: Live Curve SSR Fund.

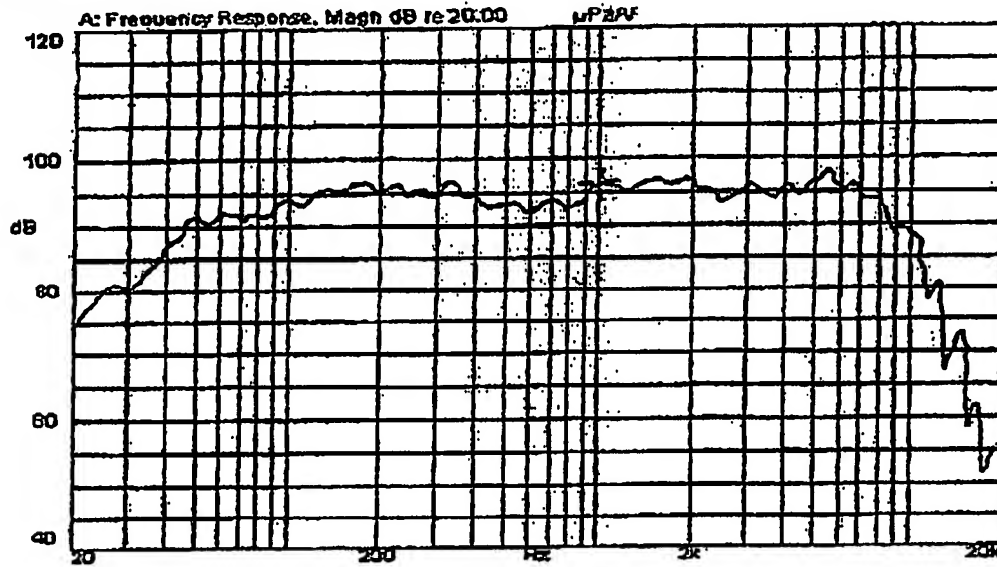


Mode: SSR



[Graph 2]

X: 1.0000kHz Y: 96.62dB ZA: Live Curve SSR Fund.



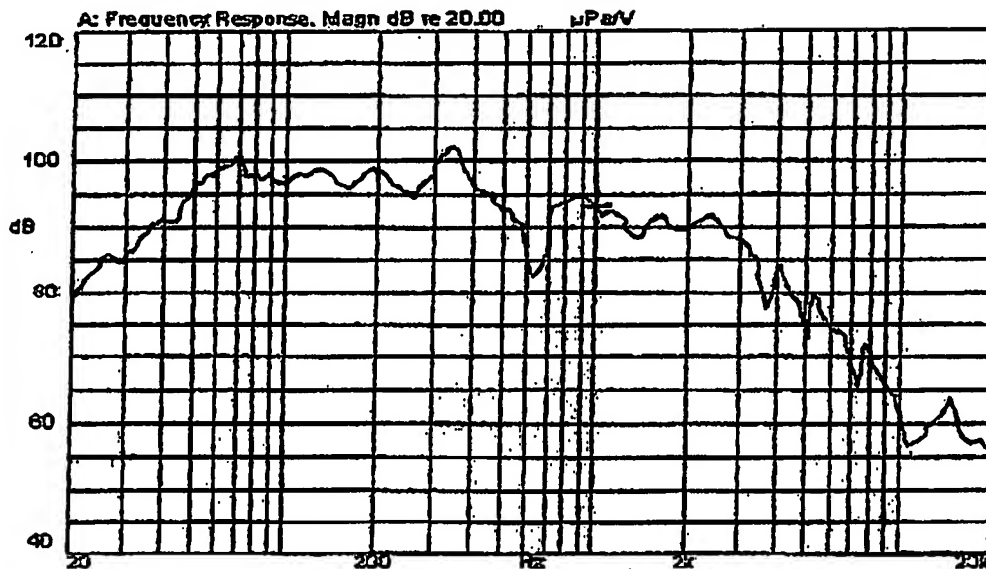
Mode: SSR





[Graph 3]

X:1.0000kHz Y: 93.90dB ZA:Live Curve SSR Fund.



[Graph 4]

X:1.0000kHz Y: dB ZA:Live Curve SSR Fund.

